

TEXTILE RECYCLING PRACTICES IN INDIA: A REVIEW

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ABSTRACT

21st century world specially developed nations are worried about polluted environment and there adverse effects on nature. There prime concern is to seek various environment friendly ways for better present and secure future. Sustainability, recycling, corporate social responsibility, extended producers responsibility, circular economy theory is some of the very modern concepts to overcome the problem of pollution and wastes.

Many industries and research institutes have taken this concept on a prime importance and trying to find out more and effective alternatives, especially in developed nations. Even industries are keen to search and produce eco friendly products followed by strict environment related government policies to save the nature.

In developed nations like India, the concept of sustainability is at infancy phase although door to door SHC (Second hand clothing) collection by Wagdi community in exchange of utensils and words biggest textile recycling industry (shoddy industry of Panipat, Haryana,) is situated in India. These different small and large scale textile recycling based businesses are practiced for the livelihood not for the sake of environmentalism. In India, along with shoddy various pre and post consumer textile wastes recycling activities at both industrial and household level are practiced since long. Due to lack of awareness, government support and very low economy in last few decades, these recycling based various organised and unorganised businesses are losing their profit, identity and charm instead of get promoted and encouraged for the sake of environment.

KEYWORDS: Second Hand Clothing (SHC), Recycling, Sustainability & Textile Waste

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INTRODUCTION

Apparel and textile industry is a one of the most ancient and an established industry. Due to advancement in technologies, industrialization and rapid change in fashion there is huge production of textiles, and production is always associated with some form of pollution and waste. In present life style we cannot limit the production but we can find out infinite alternative ways of recycling to reduce the burden on nature. These Eco friendly ways are very important not only to save nature but to secure our future generations.

In recent years the social conscience has become more sensitive to environmental issues, especially in developed nations. According to Domina et al., 1999, growing attention to environmental responsibility, public policy interests and aggressive promotion of recycling are some of the motivating factors among consumers to think about lesser generation of wastes products and there proper channelling to landfills. Many communities are more sensitive towards management of the municipal solid waste stream and purchase of environmentally sensitive

products by their consumers. (Domina et al., 1999)

Clothing is reported to account for between 2 and 10% of our environmental impacts. Clothing and footwear comes after food and drink, transport and housing that together are responsible for 70 to 80% of the environmental impact of consumption (Hawley, 2006)

Textile waste is mainly classified as preconsumer and postconsumer waste.

Preconsumer waste: It is also called manufacturing waste and clean waste. These are the wastes generated during the processing of fibres (natural, synthetic), yarn, fabric (woven, knitted, nonwoven) and garments. Fibre lint, rejected yarn during spinning, defaulted fabrics during manufacturing, fabric and garment trims during garment manufacturing and rejected garments during production comes under this category.

Post-consumer textile waste: It's also called house hold waste and dirty waste. According to wang et.al., 2003, any worn out, damaged and out of fashion apparel and textile product which is discarded and no longer in use by the wearer are called post consumer textile wastes. They are sometimes given to charities but more typically are disposed off into the trash and end up in municipal landfills. (Wang et al., 2003)

Industrialization, contemporary lifestyle, problem of over consumption, rapid change in fashion, easy and cheap availability of textiles, lack of consumer awareness about environment friendliness, lenient government policies, lack of classic designs, low popularity of second hand clothing, lack of consumer's textile care knowledge and lack of systematic pipeline of textile recycling are some of the major causes of textile waste generation.

It was estimated that total solid waste generated by 217 million people living in urban areas are expected to increase from 83.8 million tons in 2015 to 221 million tons in 2030. This ignites thinking for waste management. (Agarwal et al., 2015)

TEXTILE WASTE RECYCLING PRACTICES IN INDIA

Spiritual country India, with different cultures, geography and religions is practicing various recycling based activities since long time as one of the Jain philosophy emphasize on Aparigraha (means don't store and buy as per the need). Recycling of textiles was a domestic craft in India and it was done at both industrial and household level. Lot of ancient art and crafts are based on recycling. According to Norris, 2010, clothing has a very important social and cultural significance in India. It is hardly discarded in fact there are various ways to recycle clothing for both domestic and global market. (Norris, 2010)

Textile Recycling Practices at House Hold Level

Many recycling activities can be seen in day to day lives of many Indians which are lasting since long and generally considered as low standard and substitute to overcome financial crises. Some of the common and long standing practices are- use of old clothe for new born child as they are comparatively soft, free from surface finishes, easily available and low in cost. Soft cotton clothes and sarees are commonly used as very good substitute of sanitary napkins as these are more hygienic and cheaper. Use of old clothes for dusting and mopping in household activities, Use of fabric scraps for stuffing soft toys, pillow and mattresses, use of old precious silk sarees in making of cushions, curtains, bedcovers and other household items and passing precious traditional textile pieces generation to generation as memento are some of the very common practices still continue in India and many parts of world. There is cult of designers and NGO

who rejuvenate old precious sarees into new value added products with a new look.

Textile Recycling Practices at Crafts Sector

Apart from various household activities there are some recycling based crafts as well who probably immersed either to show creative expression or as a good and cheap substitute of raw materials. These recycling based crafts are mainly female dominated activities and later became source of livelihood for their communities or tribes.

Kantha work of Bengal can be considered as one of the oldest textile recycling practices in craft sector where excellent use of old muslin sarees is done as the base material to engrave beautiful hand embroidery using running stitch.

According to Bairagi, 2014, the nomadic Bakkarwal and Gujjar tribes of Jammu and Kashmir and Rajasthan use various recycling based textile craft which is a part of their tradition, culture and to preserve the old textiles. Tribes belong to Jammu and Kashmir converts the old woollen felt blankets into handmade rugs by doing handmade needle work embroidery using acrylic yarns. Similarly tribe belongs to Rajasthan do patch work, embroidery and mirror work to enhance the beauty of their textile products. Lot of accessories like cap, bags, wall hangings, mojaris (footwear), cushions etc are also created by recycled textiles. (Bairagi, 2014). Chindi durries of Haryana, where Durry weaving on pit looms is a very common practice at every next door of rural areas. Strips of old sarees, shawls, dupatta and other garments are used as raw material for rough weaving.

Industrial Textile Waste Recycling Practices

After understanding the importance and need to save environment, recycling at industrial level has become one of the most prime thrust area for the researcher and scientists. Companies are partnering with engineers, researchers, and industry leaders to determine value-added products where used textiles and apparel can be used as textile waste is nearly 100% recyclable nothing can be wasted. Some examples are as follows-

- Shoddy industry of Panipat which is also known as global textile recycling capital is perhaps one of the most effective, successful and comparatively oldest industrial textile recycling practices in India, which recycle approx 1,44,000 tonnes of SHC (Second Hand Clothing) discarded by many developed nations every year. Bulk amount of textile wastes especially SHC (Second Hand Clothing) is used as raw material to create low quality products like blankets, shawls, carpets etc. Approx 3 tonnes of fabric produce 1.5 tonnes of shoddy yarns. The garments are sorted and then the entire garment is opened and broken up into fibrous mass on garneting machines. These fibres are then dyed, carbonized and converted into woollen spun yarns from which blankets are made. According to an article published by Ravasio, 2013, some 22,028 tonnes of used clothing were imported in 2006/7. This number grew to 37,000 tonnes in 2007/8 and then nearly 6 times that (218,698 tonnes) in 2008/9 for shoddy production. But in last few years this world famous recycling industry is at decline and losing its identity, profit and charm due to its tough battle with polyester blanket which are cheaper, warmer and light in weight and many other problems like economic slowdown and limited product range of shoddy yarns. According to an article published by Rebello, 2015 there were around 600 to 700 shoddy yarn and textile manufacturers in Panipat up until 2012; now there are barely 150 units. The production value has decreased drastically from Rs. 35 crores to 90 crore a month. Import of SHC containers have also reduced from 800 containers/month to 300 containers/ month.

- Many carpet manufacturers, fibre and chemical suppliers, recycling companies, and academic institutions are actively pursuing various methods to recycle fibrous waste. The approaches include chemical processes to depolymerise nylon and other polymers, recovery of plastic resins from carpet fibres, direct extrusion of mixed carpet waste, composites as wood substitutes, fibres for concrete and soil reinforcement, waste-to-energy conversion, and carpet as feedstock for cement kilns. (Wang et al., 2003)
- Reclaimed fibres are used in making papers instead of wood pulp. These papers are very good in terms of strength and quality.
- Most of the mills, recover the useful short fibres from the blow room waste by passing them through willow machines, that in-turn leaves a non resalable residue called “willow waste”. The scope of the waste from cotton industry extends its products to upholstery cloth, curtain cloths, cover cloths, blanket, towels, shirting, quilts, underwear, carpet, industrial roller cloth, electric cabling, hosiery and in the manufacture of asbestos yarn, tissue paper, nonwoven, linoleum, plastic and regenerated fibres. (Vishnoi, 2013). Willow dust collection and generation of bio gas is another significant achievement by different research institutions, which have been adopted by the textile mills
- Pure white cotton fibres may be converted to superabsorbent polymers by chemical modification and can be used for production of medical textiles i.e. in diapers, bandages and pads.
- There is possibility to produce cellulose in the powder form, which can be used as fillers, or for blending with other polymers for developing composite materials. Super absorbent agro- textiles for water storage and controlled water release for plantation in arid or desert land can also be made. (Vishnoi, 2013). Excellent use of fibre cellulose can also be seen in medical field as well for making various medicines and membrane of life saving medical equipments
- Polypropylene which is widely used in the production of sport wear can be reprocessed by producing pellets/master batches and further moulding into different plastic component. (Vishnoi, 2013).
- Patagonia is the first company who recycled PET bottles to produce first polyester fleece jacket in 1993, Now they recycle various manufacturing waste, plastic bottles, and worn out clothing into approx 82 different products like insulated pants, down jackets and beanies.
- Cutting and left overs of the wool and wool rich blends after shoddy are shredded mixed with thermosetting resins to produce composites that have wide use in several industries as a reinforcing material. For example, Borgers Pvt. Ltd. Germany consumes cotton cut portions from jeans to the extent of 1.5 kilotons per years for making composites. (Sule, et. al., 2001).
- According to Hawley, 2006, 100% cotton sweaters are sorted and shredded by one of the world's largest sporting manufacturing companies. They use cotton fibre with sand which is used in a “Punch-n-Kick” bags. (Hawley, 2006)
- Contributions have also been made in the silk industry where by wastes generated in the silk industry during rearing of soil and reeling operations have been identified. The oil has been extracted from pupae collected in the silk industry.

- Sericin which was considered waste in silk industry is now having a very good commercial value in cosmetic industry and its available at approx Rs 5000/- kg
- A researcher in India found that willow waste can be processed to become compost that can enable organic cotton to a viable enterprise. Their work aimed at bio managing cotton waste by means of a three tier system of enzyme-earthworm-microbe interaction. An attempt was also made for conversion of hospital textile waste, domestic and post industrial wastes, effluent waste, diapers, sanitary pads and other nonwoven (disposals) into compost and evaluating the properties of the compost made from various textile wastes. The study is targeted on the success of growing cotton using the prepared compost as an aid and new innovation in the cultivation of organic cotton. (Aiswariya et.al.,2010)
- According to one of the technical expert of Jharcraft (Jharkhand Silk Textile & Handicrafts Development Corporation Ltd.) Waste fibres of silk are used as the insulating layers in very high quality sleeping mattresses as silk fibres gives more warmth.
- An alternative for textile recycling was given by (Zonatti et al, 2015). They used thermoset resins and recycled cotton to make thermoset composites which they used in making fashion accessories.(Zonatti, et.al.,2015)

PLAYERS OF THE TEXTILE WASTE RECYCLING INDUSTRY IN INDIA

The work of textile waste recycling is not new in Indian culture. Many communities practice textile recycling activities directly or indirectly to show their creativity and artistic expressions in their various textile crafts. The influential factor behind recycling is their creativity and source of livelihood. Nature protection, sustainability objectives are in reality secondary motivational factors. Still there are many organised and unorganised communities who are into textile recycling profession since long. Knowledge of Organised or unorganised Indian recycling industry is incomplete without the names of the following professions and communities who are the back bone of this textile waste recycling business in India.

People of Wagdi Community

Wagdi community, commonly known as Bartan wala/wali are the most important people who are working in textile recycling business since long before the concept of sustainability. They collect the second hand cloths/ post consumer goods in exchange of utensils (Bartans) these people are basically from Mahsana region of Gujarat state (India). They are spread almost all over the India. This business is mainly dominated by the ladies of the family. They go all around and collect the SHC in exchange of utensils. The male of the family then sells out those collected garment further to the traders of SHC (Rahul Bantani, member of Wagdi community, one of the informant). Few decades back this community was doing business well but changing lifestyles and time consuming bargaining haggles made them unpopular in recent times. Their market has shifted from upper/middle class segment to the less privileged segment of society because of changing mentality for donation.

Traders of Second Hand Clothing

These are the middle men between the collectors and retailers of second hand clothing. Raghubeer nagar, Azad marker of Delhi, is the biggest SHC market in India. There are lot of traders who buy and sell SHC from many sources like Bartan wali (people of Wagdi community) and illegal trade of SHC coming from developed nations. They sort, clean and mend for further sell in different markets.

People of Kathiyawad Community

These are the people who sell the diamond garments of SHC. Craft lane of Janpath at Cannaught place, Delhi is the right place to get beautiful hand embroidered, ethnic, rich fabrics and garments. This is a known place for the designers who seek for the rich, traditional costly fabrics on very reasonable prizes. This work is mainly carried by the ladies of the Kathiawad community from Gujrat. They have fixed place to sit and bargain. This community is considered above then the people of Wagdi community. Clothes are collected by the ladies of Wagdi community is sold to the traders of SHC. They sort and mend the garments in different categories. The valuable and precious findings are send to the retailers of the SHC.

Real Fabric Zari (Gold and Silver Work) Extractors

Business of Extraction of real Zari (real gold and silver wire embroidery work on fabric) is still practices by some old businessmen. They purchase real Zari fabrics by the weight of the fabrics (more weight more amount of gold and silver). Real work silk sarees are the one of the precious findings for the people involved in this business of SHC. There are very few people who are still practicing this king of business. Some shops in Kinari bazaar, Chandani Chauk, Old Delhi can be figured out who are still practicing this business. Some wall posters can also be seen for the collection of these diamonds. Bartan wali also give more valuable utensils in exchange of these precious old real Zari fabrics. (Pyare Lal Kapoor, Old Silver Gota & Zari, Kinari Bazaar, Delhi, one of the informants)

Fabric Scrap Collectors

These are the people who collect and sort the fabric scraps from various garment production houses and sort them on the bases of same colour and same fabric type. These types of collection and separation areas are generally situated near the textile parks from where they can collect the scraps very easily. In Mangolpuri Karta market, Sanjay Nagar, old Faridabad, Sanjay market Jamunapaar are some the areas where this kind of collection and separation is done. This type of Katrants (fabric scraps) are generally used by various modern textile recycling based industries like paper making, use of cotton cellulose in medicines, Durry (carpet) making etc. This type of work is governed by fabric scrap dealers. (C.P.Gupta, fabric scrap trader, one of the informant).

SHC Retailers

Janpath, Cannaught place, Sarojani Nagar, Lajpat Nagar, Shankar Market (Jamunapaar) are some of the unorganised flea markets for the sale SHC. These are the final destinations for sale of the SHC coming illegally (without fair trade) from US and other European countries. These are very famous place among the young urban populations to buy fashionable clothes. In last few years the number of these flea shops has increased tremendously in various local markets of Delhi and other metro cities of India to capture the attention of fast and fashionable youth. They can get branded fashionable garments on a very reasonable prises very easily. These SHC flea markets are not just confined to old markets like Sarojani nagar, Lajpat nagar of Delhi. They can be seen in various local markets and malls and have become tough competitor to the apparel retail shops but their approach is limited to urban areas.

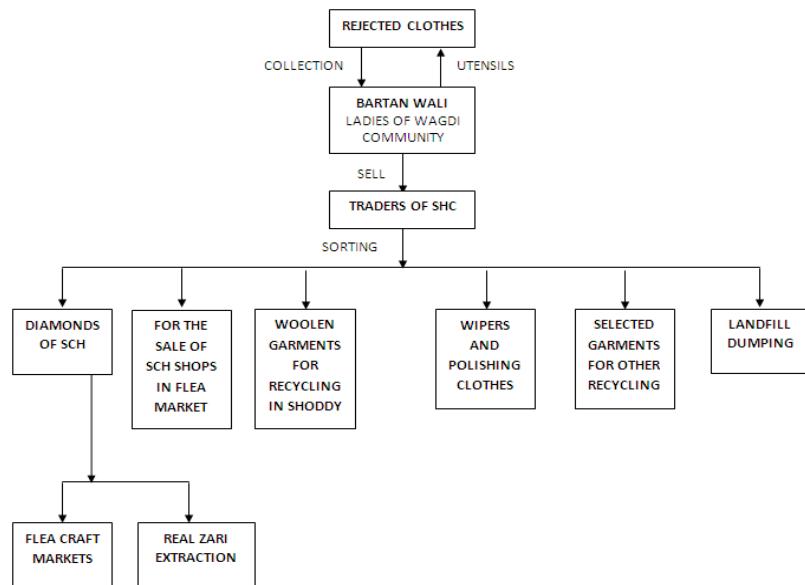


Figure 1: Indian Second Hand Clothing Collection and Sorting



Figure 2: Bartan Wali (Ladies of Wagdi Community)



Figure 3: SHC Diamond Craft Market in Janpath, Delhi



Figure 4: Real Zari Extraction Workshop at Kinari Bazar, Chandni Chowk, Delhi

BARRIERS FOR INDIAN TEXTILE RECYCLING INDUSTRY

Lack of Awareness among Indian Citizens

In India people are not much aware about the concepts like recycling and its benefits. The percentage of aware population is almost negligible. Due to influence of western civilization urban populations purchasing and discard of clothing behaviour has changed drastically. They believe to buy randomly. Care, maintenance and proper discard knowledge of clothes is not appropriate. Logo of recycling on big branded apparel polybags can be seen but there significance is not understood properly. The amount of discarded cloths has increased a lot in urban areas but Burtan Wali (Wagdi community people who are in SHC business) are not collecting proportionate amount of clothes because of consumers negligence, lack of knowledge and there not so easy availability. As a result, these people have very few profits and they are forced to shift their business.

Lack of Proper Channel

In India there are not so proper and organised channels for the discard of wastes like developed nations. Government support and policies seems to be negligible. Concepts of Textile bins, donation centres are far behind in India. There are very few NGO like Goonj, Chintan etc working in textile waste recycling direction but there work area is very limited to some places. Old and effective channel of textile wastes recycling (people of Wagdi, Katiawad community) are losing their profit, businesses and identity because of low awareness, negligence and support.

Lack of Government Support

There are some government policies for waste management and recycling but they are poorly enforced so there is need to have active government support and participation to promote recycling based research work, NGO and the most importantly upliftment of the communities and people working with recycling based activities since long.

Low Demand Of Shoddy Industry Products

In last few years demand of recycled shoddy products that is woollen blanket have decreased drastically. Change in weather, economy slowdown, limited inferior quality products of shoddy yanr and the most importantly alternative polyester blankets production which are comparatively cheaper, lighter and warm are some of the major reasons for this low demand of shoddy. (Mr. Sanjeev Goyal, Om Shakti Enterprises, Panipat, India) one of the informant).

Neighbour Country Competitions

Bangladesh and Pakistan have become tough competition to Indian garment manufacturing industry. As a result there is comparatively low production of garment in organised export garment sectors. Low production of garment directly effects the production of preconsumer fabric scraps which has adverse effect on businesses and people related to fabric scraps

Unorganised Garment Sectors

In India tailored made garments are still popular then readymade garments. To full fill the demands of masses there are infinite number of road side tailors, boutiques, and small garment construction units which are not registered and certified. They are not following any garment construction rules and regulations. Scraps of pre consumer textile wastes produced by organised sector and SHC is channelled as compare to the preconsumer wastes produced by this unorganised garment construction sectors. There fabric trims are varied in colours, fabric composition and shapes which they are

directly throwing to the landfills.

Lack of New Technologies

According to Vishnoi, 2013 India is expected to grow around 3-5% in the area of disposals, which will increase proportionate disposal in landfills. (Vishnoi, 2013). Textile production and proportionate amount of both pre and post consumer textile wastes are increasing day by day. Recycled products of shoddy industry and small scale recycling practices in craft sector are not enough for the recycling of mass production of wastes. For the better economy and livelihood we cannot limit the production but we can find infinite effective textile recycling practices with new technologies and varied product ranges.

SOME MODERN CONCEPTS OF TEXTILE WASTE MANAGEMENT

Waste management is the concept which helps to save environment, to reduce the cost and other monetary benefits to company and people in different way. It is the basic need for any industry and local people to have pollution less environment. It is like two way benefits of saving resources as well as following government norms and regulation. Waste minimization is instrumental in decreasing pollution load and to some extends production costs. (Agrawal et.al, 2015)

5 R's of textile waste management (rethink, reduce, reuse, recycle and reintroduce) are very important tools to overcome the problem of textile waste by conserve natural resources, landfill spaces and energy.

It's very important to form some effective policies which makes hand in hand bond between production and environment. Third world environmentalists have also recognised that return to the sender policy and recycle wastes into wealth are the only effective means of discouraging toxic dumplings and environment protection. (Aishwariya et.al., 2010). Some of the modern concept for sustainable development and effective textile wastes management are –

Corporate Social Responsibility

Social responsibility is “an organization’s obligation to maximize its positive impact and minimize its negative impact on the society”. In other words, it is “the concept that businesses should be actively concerned with the welfare of the society at large”. The concept of social responsibility is applicable to individuals and governments as well as organizations. The social responsibility of an organization is referred to as ‘corporate social responsibility’.

The concept of corporate social responsibility (CSR) is on the rise all over the world, and India is no exception. CSR activities are governed by clause 135 of the Companies Act, 2013 in India. It encourages companies to spend at least 2% of their average net profit in the previous three years on CSR activities. Only companies of a certain size are included in Clause 135. The rules define the companies affected as those having net worth of Rs 500 crore or more; or annual turnover of Rs 1000 crore or more; or annual net profit of Rs 5 crore or more (net profit before tax, not include profits arising from branches outside India).(51)

According to clause 135 (Schedule, VII), of CSR, following activities comes under CSR. 1. Eradicating extreme hunger and poverty, 2. Promotion of education, 3. Promoting gender equality and empowering women, 4. Reducing child mortality and improving maternal health, 5. Combating human immunodeficiency virus, acquired immune deficiency syndrome, malaria and other diseases, 6. Ensuring environmental sustainability, 7. Employment enhancing vocational skills, 8. Social business projects, 9. Contribution to the Prime Minister's National Relief Fund or any other fund set up by

the Central Government or the State Governments for socioeconomic development and relief and funds for the welfare of the Scheduled Castes, the Scheduled Tribes, other backward classes, minorities and women, 10. Other activity not mentioned above.

A score of 10 will be awarded if an activity was initiated which is mentioned above otherwise a score of 0 will be awarded. A firm can score a maximum of 100 points and a minimum of 0. (51)

Study conducted by Venugopal et.al. 2015 on “Ethics and Social Responsibility in Indian Textile Industry (A Study on Textile Industries of Coimbatore and Tirupur, Tamil Nadu)” reviled that the textile industries and the industrialists of Tirupur, are lagging in their ethics and responsibility. Manufacturing units are not at all caring river water pollution, ground water pollution, water scarcity, land, aqua life, human life and environment as a whole. They are more concern about the customers, exports and profits. Majority of the respondents revealed that the organizations are working as per the labour laws, rules and regulations only on the paper, but in reality problems like child labour, no fixed working hours, no freedom to form an association and poor working conditions still exist. According to 85 per cent respondents, the textile industries in Tirupur are not socially responsible and they are not doing proper social welfare activities. (Venugopal et.al. 2015)

Extended Producers Responsibility

It is one of the very modern and seems to be very effective concept. According to Niinimaki, 2015. This concept has gained lot of attention. The original producer or manufacturer has to think about the recycling and proper management of textile wastes before the production of that textile. Now it's their responsibility to think about the waste management of the products before creating them. Effective recycling of products will also become the part of their design phase. Companies should have their waste management system and they have to take back their waste products to reuse, redesigning or recycling. This take back system may be based on closed loop or open loop thinking. In closed loop thinking all off-cuts, wastes and products will be treated inside the factory's own processes while in open loop thinking recycling can be done by some other outside partner. (Niinimaki, 2015). For Indian textile sector these concepts are very new.

Circular Textile Programme

It aims to establish a process that ensures the recovery and upcycling of textiles in a closed loop. In order to close the loop, we must begin to understand waste as an indication of inefficient design, production and consumption patterns and partially shift our focus from the waste management industry to the entire supply chain itself, in order to develop methods of waste prevention through new recycling technologies, market demands and changed consumer behaviour

Take Back Programme

Many brands and retailers have shown interest in this issue and have started to take ownership of their products beyond retail, developing take-back programs with incentives. (Chavan, 2014) In 2005 we began taking back worn out Patagonia clothing for recycling. in India Big Bazaar, Lifestyle, Shoppers stop etc are some of the big brands who often provide this kind of schemes for their customers.

Online Market Place

There are lot of online websites and groups on many social networking sites and app like Whatsapp, Twitter, Facebook, Instagram etc who are providing facilities to purchase organic items, recycled products, garments on rent, SHC (second hand clothing) and diamond of SHC(second hand clothing). Do u speak green, My green kart, Assisi garments, Green the gap, Green n good, Shop n pick are some of the upcoming and famous online websites where one can get organic, recycled, upcycled products.

New Entrepreneurs/ Ventures of Recycling

Goonj (Textile waste recycling), Jaagruti (paper wastes recycling), Conserve India (plastic bags and other fabric wastes), Weee recycle India (E.Waste recycling), Nepra, foundations, Pick me up, Chinta, Shuddi, Vatavaran are some of the NGO who are working on different recycling based concepts in India.

Goonj has become known name which is mainly work on textile wastes recycling. It is a NGO working in approx 21 states of India for various disaster relief, humanitarian aid and community development programmes. It was founded by Anshu Gupta 1999 and became first NGO to highlight clothing as a basic but unaddressed need which deserves a place on the development agenda. Useful product like sanitary napkins are produced after recycling of discarded clothes and other household goods. It collects and delivers 1,000 tons of material every year through a network of 500 volunteers and 250 partners. It also runs infrastructure and local development projects in villages and slum areas. This organisation has awarded the prestigious Ramon Magsaysay Award in 2015

CONCLUSIONS

- Increased amount of Textile creates the proportionate amount of textile wastes which need to be recycling for both economical and environmental reasons.
- Textile wastes recycling practices at both household and industrial level are practiced since long in India.
- Various household textile wastes recycling practices have decreased in last few decades due to the easy and cheap availability of alternative better quality products and negligence of new generation. Many of them are not even aware about the importance and procedures of old household textiles recycling practices.
- Research institutes and industries are keen to search various textile waste recycling practices and product range at industrial level for both economical and environmental reasons.
- World famous Shoddy industry of textile waste recycling at Panipat, Haryana is at decline since last few years because of cheaper, lighter and warmer polyester blanket production, change in climate and very limited inferior quality products range (recycling of woollen with the blends in making of blankets). It's a burning issue for the whole world's textile recycling industry and has effected recycling of worn clothing to a huge extent.
- People of Wagdi community, Kathiawad community and real fabric zari extractors are some of the old players while fabric scrap collectors, SHC retailers and work done by various recycling based NGO are some of the new players in the business of textile wastes recycling.

- Old players of textile waste recycling are disappearing in the shadow of new ideas especially in urban areas. There are processes, people, products, places and profits in the old textile recycling businesses as well which needs to be rejuvenated by the help of new effective technologies and government, NGO support. There is need to find out the ways which have two ways benefits to both the nature and to the people involved with old recycling businesses in India.
- Low awareness about recycling, improper waste management route, low demand of shoddy products, neighbour country competition, unorganised textile sector and lack of new technologies are the major barriers in front of textile waste recycling industry.
- Corporate social responsibilities (CSR), extended producers responsibility (EPR), circular textile programme, take back programme, are some of the very modern concepts of textile waste management. But most of the concepts are very new and just introduced in India textile sector. Indian organised export sector is trying to follow these concepts and international standards but unorganised textile setup is not even aware about these concepts.
- For the 100% eradication of the textile wastes problem and effective recycling there is strong need to organise and register this unorganised textile sector (road side tailors, boutiques and other small organisations) and its wastes which is mostly dumped into landfills.
- Online market place and programmes run by various government and non government organisations for recycling, upcycling and waste management are not enough to deal the problem of waste management and there approach is very limited to urban area, people and product ranges.

FUTURE RESEARCH DIRECTIONS

- Proper route of pre and post consumer textile wastes should be documented, which will spread the knowledge about the concepts like sustainable textiles and textile recycling.
- In India philanthropic study about the prevailing and motivating factors among the Indian populations is important to know there attitude towards environmentalism, recycling and charity.
- Collection of some facts and valuable data regarding wastes generated by different production setups specially unorganised sector like road side tailors, boutiques and other small production houses is very important to focus as they are directly sending their wastes to the landfills. Proper collection of their wastes can be very much useful in recycling
- Various experiments with both the pre and post consumer wastes and there upcycling and recycling is very interesting and challenging way to help circular recycling and to overcome the problem of textile wastes.
- An awareness campaigns through books, articles, documentary films, websites etc can be very effective tool for educating consumers and eradication of this textile wastes problem from roots.

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